

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

U. S. DEPT. OF AGRICULTURE
NATL. AGRIC. LIBRARY
RECEIVED
SEP 14 1927
AGRICULTURAL NOTES

PUBLISHED BY
PORTO RICO AGRICULTURAL EXPERIMENT STATION, MAYAGUEZ
OFFICE OF FARM MANAGEMENT, FEDERAL BUILDING, SAN JUAN

No. 38 Page 1.

San Juan, Porto Rico, April, 1927.

GERMINATING SUGAR CANE.

By D. W. May.

With all plants a quick germination is important. They emerge from the soil with larger shoots and apparently greater vigor if they spring quickly after planting. This is especially true of sugar cane where the growth is sometimes limited by season or by well-distributed rainfall. If after a crop is planted germination languishes, it is generally due to some poor condition in the soil or lack of water.

Various methods have been used to bring about quicker germination in cane cuttings. Soaking seed in solutions is often practised, water being the most common. There are several products on the market for stimulating seed which are sold under various trade names.

In a series of experiments by the Porto Rico Experiment Station some interesting results have been obtained which should result in considerable benefit to the sugar industry. These experiments were made with two objects in view: first, to obtain a quicker and more vigorous germination of the cuttings and, second, the killing of certain insects affecting the seed, especially the cane borer (*Diatraea saccharalis*). The canes were soaked in solutions from 1 to 8 days. The good effects were apparent in one day, while the length of 8 days was detrimental and in some solutions the cane was killed. Two days was sufficient to gain the ultimate benefit from soaking and in no case proved detrimental, while good results were possible in one day. In the case of some solutions the cane was killed even at one day.

The solutions giving the best results were water alone, lime, and lime and magnesia, soaking one day. Solutions of nitrogenous fertilizer proved of no advantage and in one case resulted in killing the cane. Soaking in water has this advantage aside from its influence in killing insects, that the canes germinate quicker and make a greater ultimate growth than where they are planted not soaked. In some cases where planting was followed by a long drouth, the soaked canes had sprouted and made a good stand, while those not soaked in many cases failed to germinate. In all cases there was a marked difference in the stand between the soaked and unsoaked canes and also in the continued growth and final yield. In soaking in limewater there was an apparent favorable condition in the earliness of germination, quicker growth and yield over the canes soaked in water alone. There was a still greater percentage of germination, growth, and yield in the cane soaked in the solution of lime and magnesia combined. In the final yield of cane treated in the manner set forth above, the cane planted as cut gave a germination of 81.41 per cent, soaked in water 86.42 per cent, and in limewater 93.03 per cent. The final yields of a series of plats were estimated as follows: Cane planted without treatment, 58.7 tons per acre; soaked in water, 71.9 tons per acre; soaked in limewater, 72.5 tons per acre; soaked in limewater containing lime to saturation and 1 pound of magnesium sulphate to 50 gallons, 85.4 tons per acre.

In preparing the canes for planting the work was done on a large scale, which can be economically followed by planters. The saturated solution of limewater was made by shoveling slaked lime into the tank. The saturated solution of lime and water is 0.13%. What remains over in the tank undissolved does no harm. Magnesia was added in the form of sulphate at the rate of 1 pound to 50 gallons of water. Repeated treatments have shown consistent favorable results with the combination of lime and magnesia in the water in which the cane cuttings were soaked. Also favorable results have been obtained in soaking cuttings of various plants with the object of precipitating a quicker sprouting and rooting and securing a higher percentage of growth.

The role played by lime and magnesia in plant production has been studied by Loew, and some interesting results developed by him. The writer, in collaboration with Loew, carried out some experiments in the employment of these two elements in the growth of various plants. The results were published in Bulletin No. 1, Bureau of Plant Industry, U. S. Department of Agriculture, under the title "Relation of Lime and Magnesia to Plant Growth." Anyone interested in the subject and especially the more detailed results and the theoretical explanation of the action of these elements can obtain such information from the perusal of that bulletin. Suffice to say that the influence of lime on plant growth is a matter well known in agriculture - one of the first points noted and established when man

JOHNSON

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

JOHNSON, JAMES H. (1871-1941)

undertook to determine what affected most the production of plants and crops. The relation of magnesia to the growth of plants has been a subject of more recent study; however, the fact that this element is present in increasingly large amounts in mature seed indicates that it is there for some purpose and one that has to do with the early development of the growing seedlings.

As the experiments outlined in this article can be followed in field practice at such a moderate cost, while the indicated results are so favorable, a trial under field conditions is urged upon all cane growers. The gain indicated is threefold: First, insecticidal, the elimination of the cane borer; second, irrigation, practically the early watering of the cane; third, yield, quicker growth and larger tonnage.

April, 1907

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

REPORT ON THE PROGRESS OF THE RESEARCHES OF THE PHYSICS DEPARTMENT
DURING THE YEAR 1906-1907. BY THE PHYSICS DEPARTMENT.
CHICAGO, ILL., 1907.

As the department continued its work during the year, it has been able to complete the work on the subject of the photoelectric effect, and to publish a paper on this subject. It has also been able to complete the work on the subject of the Zeeman effect, and to publish a paper on this subject. It has also been able to complete the work on the subject of the Stark effect, and to publish a paper on this subject.